

WHAT IS CLAIMED

1. An interface circuit for transferring a control signal from a small-signal circuit for driving a power transistor to said power transistor, said interface
5 circuit comprising a noise absorber for electrically absorbing noise voltage produced between the ground of said small-signal circuit and that of said power transistor; said interface circuit characterized in that said noise absorber ensures that said control signal
10 produced by said small-signal circuit is transferred to said power transistor, without being affected by said noise voltage if produced.

2. The interface circuit according to Claim 1 characterized in that said noise absorber comprises a
15 constant voltage dead band generator that does not allow current to flow until a certain voltage is reached, or a constant current dead band generator that allows constant current to flow until a certain voltage is reached, wherein said dead band electrically absorbs the influence
20 of said noise voltage.

3. The interface circuit according to Claim 2 characterized in that said noise absorber further comprises, in addition to said constant voltage dead band;
25 a low signal generator for generating the low signal corresponding to the low level of said control signal;
and

a high signal generator for generating a high signal corresponding to the high level of said control signal.

4. The interface circuit according to Claim 3 characterized in that said dead band voltage V_c of said
5 constant voltage dead band is set at a level higher than said noise voltage V_{noise} .

5. The interface circuit according to Claim 2 characterized in that said noise absorber further
comprises, in addition to said constant current dead band,
10 a current/voltage converting circuit that generates a high signal by converting constant current into voltage when said constant current is allowed to flow by said constant current dead band.

6. The interface circuit according to Claim 1
15 characterized by further comprising a signal amplifier that converts the control signal outputted by said noise absorber, into the signal level for turning on or off said power transistor.

7. The interface circuit according to Claim 6
20 characterized in that the difference between power voltage V_{DC} and logic voltage amplitude $.V_{logic}$ of said signal amplifier ($V_{DC} - .V_{logic}$) is set at a level higher than said noise voltage V_{noise} .

8. An interface circuit for transferring to the
25 module containing a semiconductor device the control signal for driving said semiconductor device outputted from a controller, said interface circuit comprising:

receiving means for electrically receiving said control signal outputted from said controller; and

transferring means for transferring to said module said control signal received by said receiving means,
5 ignoring changes in the level of said control signal caused by the difference of voltage between the ground potential of said controller and that of said semiconductor device.

9. The interface circuit according to Claim 8
10 characterized in that said transferring means is a noise absorber for electrically absorbing said difference of voltage.

10. The interface circuit according to Claim 9 characterized in that said noise absorber comprises:

15 a dead band generator that generates the low voltage dead band that does not allow current to flow until a certain voltage is reached, or a constant current dead band that allows constant current to flow until a certain voltage is reached, thereby absorbing said difference of
20 voltage;

a low signal generator for generating the low signal corresponding to the low level of said control signal; and

a high signal generator for generating the high
25 signal corresponding to the high level of said control signal.

11. The interface circuit according to Claim 10

characterized in that the dead band voltage of said dead band generator is set at a level higher than said difference of voltage.

12. The interface circuit according to Claim 10
5 characterized in that said noise absorber comprises a current/voltage converting circuit that generates a high signal by converting constant current into voltage when said constant current is allowed to flow by said constant current dead band generator.

10 13. The interface circuit according to Claim 8 further comprising an amplifier that converts said control signal outputted by said transferring means, into the level of said semiconductor device drive signal.

15 14. The interface circuit according to Claim 13 characterized in that the difference between power voltage and logic voltage amplitude of said signal amplifier is set at a level higher than said difference of voltage.

20 15. An interface circuit for transmitting the control signal outputted from the controller for driving a semiconductor device, to said semiconductor device;

said interface circuit comprising:

means for electrically receiving the control signal outputted from said controller; and

25 means for transferring the received control signal to said semiconductor device, ignoring changes in the level of said control signal caused by the difference of

voltage between the ground potential of said controller and that of said semiconductor device.

16. A power converter comprising:

a power transistor,

5 a small-signal circuit for driving said power transistor, and

an interface circuit for allowing the control signal to be transferred to said power transistor from said small-signal circuit;

10 said interface circuit comprising a noise absorber that electrically absorbs the noise voltage produced between the ground of said small-signal circuit and that of said power transistor, by the stray inductance of said power transistor and a power module consisting of this
15 power transistor;

said power converter further characterized in that said noise absorber ensures that said control signal produced by said small-signal circuit is transferred to said power transistor, without being affected by said
20 noise voltage if produced.

17. A power converter according to Claim 16 characterized in that said interface circuit comprises a signal amplifier for converting the control signal outputted by said noise absorber, into the signal level
25 for turning on or off said power transistor, and the difference between power voltage VDC of said interface circuit and logic voltage amplitude .Vlogic of said

signal amplifier ($V_{DC} - V_{logic}$) is set at a level higher than said noise voltage V_{noise} .

18. The power converter according to Claim 16 characterized in that a soft-switching gate-drive circuit
5 for reducing the switching speed of said power transistor is arranged between said interface circuit and power transistor.

19. The power converter character according to Claim 18 characterized in that said power transistor
10 switching speed is set by said soft-switching gate-drive circuit in such a way that the value, obtained by multiplying the inductance L of said stray inductance by the change of current I (dI/dt) flowing through said power transistor upon gradual switching of the power
15 transistor by means of said soft-switching gate-drive circuit, does not exceed the difference between power voltage V_{DC} of said interface circuit and logic voltage amplitude V_{logic} of said signal amplifier ($V_{DC} - V_{logic}$).

20. An electric vehicle comprising:
a wheel drive motor;
a power converter for converting d.c. power supplied from a d.c. power source into a.c. power, and for controlling the current supplied to said motor;
25 wherein said power converter comprises:
a power transistor;
a motor small-signal circuit for driving said power

transistor; and

an interface circuit for transferring control signals from this motor small-signal circuit to said power transistor;

5 wherein said interface circuit comprises a noise absorber that electrically absorbs the noise voltage produced between the ground of said small-signal circuit and that of said power transistor, by the stray inductance of said power transistor and a power module
10 consisting of this power transistor;

 said electric vehicle further characterized in that said noise absorber ensures that said control signal produced by said small-signal circuit is transferred to said power transistor, without being affected by said
15 noise voltage if produced.